THINKING AND SELF-TEACHING

by Gilbert Ryle

We are not often enough or deeply enough puzzled by the notions of *thinking*, *pondering*, *reflecting*, etc.; namely of what Rodin's *Le Penseur* looks as if he is absorbed in. I am not concerned with the dreary notion of *thinking=believing*, which anyhow has been sadly overworked, usually in the wrong harness.

What is *Le Penseur* doing, seemingly in his Cartesian insides? Or, to sound scientific, what are the mental processes like, which are going on in that Cartesian *camera obscura?* We are, since we have to be, absolutely familiar with the *thing*, that is, with the cogitative doing or the process of pondering itself, for it has been, at least off and on, since our infancy part of the pulse of our own existence. *Cogitamus ergo Sumus.* Yet we cannot, apparently, answer the simplest concrete questions about it. Why can't we? How could it, of all things, be hidden from us?

Notoriously some of our ponderings, but not all, terminate in the solutions of our problems; we had been fogged, but at last we came out into the clear. But if sometimes successful, why not always? If belatedly, why not promptly? If with difficulty, why not easily? Why indeed does it ever work? How possibly can it work? Notoriously, too, some people are better thinkers than others; and we ourselves may be better at thinking out the solutions of anagrams than at thinking out the solutions of chess-problems. Whence these disparities? What sort of an unevenly distributed craft or skill is this? Why did I acquire my own personal ration of it, and not yours instead? Why does not Mozart, indeed why cannot he, suddenly start thinking Immanuel Kant's thoughts, and *vice versa*? Why do not schools provide classes in thinking, as they do in mundane crafts like drawing, Latin, carpentry, and rifle-shooting? Ridiculous suggestion? Certainly. But then what makes it ridiculous to suggest that thinking is one teachable skill among others? Surely not anything like what would make it ridiculous to suggest that the natural processes of digesting and perspiring are extra skills that could and should be taught in schools or universities.

Let us pause a bit with this little riddle. Why would it be absurd for a school

or university to offer a separate course of instruction in thinking? There are two reasons, one important but dull; the other important and interesting.

1) The housewife who has separate shelves, hooks, containers, and bags marked for flour, sugar, onions, mustard, etc., does not also have separate receptacles marked 'food,' 'edibles,' 'comestibles,' or 'victuals,' for the simple reason that she has already provided receptacles for all the species of these genera. Well, similarly, the school or college curriculum which promises courses in arithmetic, French grammar, Hittite archeology, verse composition, etc., is already promising instruction in *species* of thinking. A student who has been taught some arithmetic or some French grammar has already learned in some measure to think out arithmetical problems or problems in composing or construing French prose. All learning is learning to tackle problems of this, that, or the other specific varieties. There are no residual problems of purely generic sorts.

2) If the school or college promised to teach Originality, Invention, Wit, Pertinence, Initiative, Enterprise, Spontaneity, Talent, and Genius, we should feel sceptical. The lessons, exercises, tests, competitions, etc., might indeed and should equip and encourage the students to attempt moves of their own, to compose sonnets or plays of their own, to design experiments of their own, and so on. But these adventures, diminutive, modest, or striking, must be spontaneous, else they will not be essays, inventions, or compositions of the student's own. For it to be *his* failure or *his* success, *his* good shot or *his* poor shot, it has *not* to be something contributed by the teacher. If it is the student's own sonnet, then it is not the teacher's sonnet, for all that the student would never have composed it without the teacher's suggestions, criticisms, drills, etc. Now the notion of thinking *is* the notion of thinking for oneself, of making one's own try, however perfunctory and diffident, at some problem, task, or difficulty. His instructors will have equipped and perhaps encouraged him to make his shot; but the shot is his and not his instructors'. My initiatives, small or great, unsuccessful or successful, cannot, in logic, *be* what my teachers or my textbook did for me.

To keep our restricted deck-space fairly clear for the present I am going to leave on one side such off-center things as the thinking of the man who is glumly brooding over an insult; the thinking of a man who is, for pleasure, running over in his head a tune or a poem that he has long since got by heart; and the thinking of the man who is just daydreaming. We shall be concentrating on the man who is trying to think something out, whose thinking, unlike that of those others, can be successful or unsuccessful, bright or dull, industrious or idle, expert or amateurish, laborious or easy.

I am going to approach my objective by a knight's move, one which I think may surprise you a bit. For I am going to begin by reminding you of some truisms about teaching and therefore, necessarily, also about learning. Why? Because, to put it infantilely, my hope is to define thinking indirectly in terms

of teaching. I am going to argue that *Le Penseur* is not, of course, engaged in privily teaching himself whatever it is that he wants to know—he cannot teach it because he does not know it—but that he is experimentally plying himself with might-be cues, clues, reminders, snubs, exercises, spurs, etc., of types that are sometimes or often employed unexperimentally by teachers who are teaching what they do know. But we have some ground to cover first. Anyhow from the outset it seems plausible to say that *Le Penseur* could always have been saved from his present labours of pondering by getting someone else—the Angel Gabriel, say—to teach him the answer. So there is this connection between thinking and teaching. Thinking is trying to make up for a gap in one's education.

I am going to assume, what has been argued elsewhere, that, with a reservation or two, all teaching is teaching-*to* and all learning is learning-*to*. Even the memorizing of rhymes, dates, tunes, etc., qualifies as learning just in so far as it leads to more than mechanical echoing. The child has not begun to learn to spell who can only recite, parrot-like, the dictated spellings 'C-A-T' CAT, and 'B-O-B' BOB. Only when he has begun to try to think up the right spellings or at least possible spellings for words to which he has not been alphabetically introduced, has he begun to learn to spell. To have learned to solve anagrams is to have learned to solve new anagrams, not to play back the solutions of anagrams already solved by the instructor. I am going to lean heavily later on these notions of teaching-*to* and being taught-*to*. But I warn you that here I am flying in the faces of most N.C.O.'s and of too many educationalists, who never doubt that teaching consists in dictating things for subsequent verbatim regurgitation. Naturally, though horrifyingly, some of them think well of the potential teaching-utility of subliminal gramophones. Tape recorders play back, but they do not learn. People who do learn do not just play back. Even to have learned something by heart is to have become able to do more than to parrot the piece. It is to be able to detect and correct erroneous recitations, to recite the piece and not some other piece when required to do so; to be able to deliver it fast or slowly, to start it or stop it at required places and so on.

Partly for ulterior reasons, but partly to dispel your attachment, if it exists, to this superstition that learners are mere players-back, I now remind you of a few of the teaching-methods, devices, and dodges by which ordinarily good or very good teachers do actually teach things to us.

1. They tell us lots of things, of course, but with variations in vocabulary, context, emphasis, etc., sometimes *viva voce* and sometimes in writing; with or without new illustrations, expansions, elucidations, corollaries, etc. They do not repeat themselves like cuckoo-clocks, or not much—and for obviously good pedagogic reasons.

2. They test us, hardly at all for our ability to parrot their actual words or to ape their actual movements, but for our ability and readiness to exploit

the lesson itself by applying it, re-phrasing it, accelerating it, drawing conclusions from it, marrying it with earlier lessons, etc., etc.; in short, by doing things on our own with it.

3. They teach us cricket-strokes, perspective-drawing and French pronunciation, not much by describing anything, but by *showing* us how the thing should and also how it should not be done, and then getting us to move or utter, and *not* to move or utter in similar ways.

4. They tease us, like Socrates, with questions, and then with further questions about our answers, and it is we who do the answering.

5. They make us practice and re-practice our five-finger exercises and our conversions of syllogisms, with variations in tempo, syllogism-topic, etc.

6. They lead us by the hand along a half-familiar track and leave us in the lurch to get ourselves over its final stretch.

7. They cite or exhibit blatantly erroneous or inadequate solutions, for us, in recoil, to improve on them and/or to pinpoint what was wrong in them; and they caricature our own sillier attempts in order to get us to ridicule them for ourselves.

8. They draw our attention to partly analogous, but easier problems, and leave us to use these analogies as banisters.

9. They break up complex problems into simpler ingredients and leave us to solve these unalarming ingredient problems, and then to reunite their solutions.

10. When we have hit on the (or a) solution, they set us subsidiary or parallel problems in order to get us to consolidate and limber up our mastery of the original solution.

All of these and scores or hundreds of similar didactic moves, expedients, tactics, and dodges are intended by our teachers to get us ourselves to do and to say things of our own (as well as very often to undo and unsay things); for example, not just to parrot the recited spellings of a few given words but to attempt the spellings of hitherto unattempted words on the lines of those dictated specimens, and to withdraw or improve our first attempts.

Naturally and notoriously the pupil often fails to respond, or to respond well. He is, perhaps, scared, bored, sulky, stupid, restless, unambitious, or hostile, and the teacher is, perhaps, tired, shy, in a hurry, cross, pessimistic, and off his preferred subject. Conversely, the fact that the pupil has shown no sign of progress yesterday or today is quite compatible with his coming on fast next week or next term. Seeds often do germinate slowly. Muscles always are slow to harden up. Did you succeed in swimming in your first lesson? If not, had you learned nothing at all in that first lesson? I mention these truisms because *Le Penseur's* own ponderings (which is what we are all along concerned with) can be in just the same plight. He too flogs away and makes no headway today; tomorrow he too seems to be in a worse muddle than ever; yet sometimes, though not always, for him too things will have

sorted themselves out rather well after the weekend. Dividends often do arrive rather a long time after the investments are made. Thus the progress made or not made or not visibly made by *Le Penseur* resembles in several ways the progress made or not made or not visibly made by the teacher-pupil pair. Our question, "Why does thinking not always work, or not always quickly?" is in parallel with the same less puzzling questions about teaching.

None the less, whatever their other similarities, *Le Penseur* is not himself, so to speak, a Siamese teacher-pupil pair. For the teacher knows the things that he tries to teach to his pupil; *Le Penseur* is pondering just because he does not know what he wants to know. My thinking is not the instruction of pupil Gilbert by teacher Ryle. Gilbert Ryle, in his thinking, is trying to find out what no one, external or internal, is there to teach him. To ponder is to try to make up for *un*-instruction. What I am trying to think out for myself is indeed something that the Angel Gabriel conceivably might have known and taught me instead, but it is something that no one in fact did teach me. That is why I have to think. I swim because I am not a passenger on someone else's ferry-boat. I think, as I swim, for myself. No one else could do this for me.

Now I make a start on the second leg of my knight's move, namely to bring out a connection, *not* an identity, between being taught and thinking.

I have already declared that the pupil does not qualify as having even begun to learn to spell or solve anagrams so long as all he is ready and able to do is to play back the dictated spellings of a few selected specimen words or the dictated solutions of a few specimen anagrams. Only when he begins to suggest possible spellings of his own for new words, or possible solutions of his own for new anagrams and to reject some such suggestions, does he qualify. Ditto for learning rock-climbing, chess, and philosophy. His blank repetition of what the teacher said or exhibited is not yet what the teacher was trying to get him to do. But notice now: when the pupil does make his own applications and misapplications in new tasks of what his teacher has told or exhibited, then he certainly qualifies as thinking. For he is now applying off his own bat a recently learned operation-pattern to a new object or situation; he is today innovating according to a formerly set precedent; he is today chancing his arm subject to some previously inculcated safeguards. His frequent mistakes and failures are now his doing; his occasional successes are now his doing. It is he and not his teacher who now merits praise or blame for getting things right or wrong.

Here we are confronted by a seeming paradox. For we seem to be saying that in spelling or misspelling a new word, or in solving a new anagram, or in composing his own limerick or sonnet, the pupil is doing something on his own, which, therefore, he had not been taught. If it is his own sonnet or limerick, or his own anagram-solution, or his own spelling or misspelling of the word "rabbit," then *that* could not have been something that his teacher

had taught him. Conversely, if that sonnet, that anagram-solution, or that spelling of "rabbit" had been taught by the teacher, then it was not the pupil who thought it up, but the teacher—or his teacher. However, the appearance of a paradox vanishes when we remember that having learned, say, to spell does not reduce to having become the passive recipient and subsequent automatic regurgitator of some dictated letter-sequences. It is to have become able and ready to attempt new applications of acquired patterns, methods, precedents, examples, etc. The young rock-climber is first learning to climb when he ceases to tread *where* his teacher trod and begins to try to tread over new slopes *in the ways in which* his teacher treads.

I am not changing the subject when I now invite you to consider (A) what Socrates and the slave boy do in Plato's dialogue, the *Meno;* and (B) what they do in my sequel to that dialogue.

(A) Socrates asks the geometrically innocent slave boy how he would construct a square precisely double the area of a given square. In the end the boy comes out with the right answer, namely that the square on the diagonal of the original square is of twice the area of that square itself. But Socrates elicits this correct Pythagorean answer without *telling* the boy any geometrical truths, however simple. He merely asks him questions, and then by further questions gets him to abandon his first tempting answers. We need, for our purpose, to note a few points about this piece of interrogative pedagogics or tutorial cross-questioning.

(1) Though this point is not emphasized, the boy is already equipped with a modicum of elementary arithmetic and, of course, with colloquial Attic Greek.

(2) Unaided Socratic cross-questioning could not possibly have made similar progress or any progress at all towards the solution of factual questions about, say, the casualties at Marathon or the date of the next eclipse of the sun. Nor could *Le Penseur's* unaided ponderings.

(3) Though Socrates draws his famous moral that the boy must in a previous existence have got to know that Pythagorean theorem for it to be able to be elicited from him now by mere questioning, we, surely like all the disputatious young men in the Academy who were any good, flatly reject this moral on the obvious ground that if, without still ulterior memory-flogging, the boy had been able in that supposed previous existence to discover the Pythagorean theorem by thinking, then there is nothing to prevent the boy from discovering it by thinking today. How was it originally discovered? Some solutions to some problems are attainable by pondering; all the more so when the ponderer is cunningly and persistently barked at by a Socratic sheepdog who already knows the way.

(4) Although the boy has given to each question, one by one, first his ill-thought-out answers and finally the wanted well-thought-out answer, still he does not claim to have thought out the whole proof for himself. After a fumble or two he had picked up each of the several links one by one, but it was Socrates who had controlled the chain. Already knowing the proof of Pythagoras' Theorem, Socrates, unlike the boy and also unlike *Le Penseur*, knew all along what questions were the right questions to ask and what was the right, or at least a suitable, sequence in which to ask them.

(B) Now listen to my own fabrication, namely the story of Socrates' *second* interview with the boy. Socrates begins again by putting a theorem-sized question to the boy; and he starts off as before by posing appropriate questions and demolishing the boy's initial answers to them. But now—oh horror!—Socrates realizes that he himself has either quite forgotten or, even worse, never had mastered the second half of this second theorem's proof. He has no idea how to go on; and, as Euclid's *Elements* has not been published yet, he cannot even surreptitiously consult that will-be standard work. What is to be done? He frankly confesses the crisis to the boy, who, to start with, sees no difficulty. He says, "But yesterday, Socrates, you did not tell me any of the answers; you only asked me questions, to which I myself after some false starts gave *you* the right answers. Why can't we do that again? You don't need to know their answers in order to ask questions."

Socrates explains that randomly thrown out questions cannot be expected to assemble themselves into a proof-generating sequence, but he concedes that with huge luck they might do so; and he concedes that he, Socrates, has had enough teaching experience in general, and has enough geometrical knowledge in particular to avoid asking lunatic, irrelevant, or infantile questions and to see through grossly silly answers. He cannot, as yesterday, pilot the slave boy, since today he does not know the channels. But he can make and coordinate some conjectural pilot-like suggestions and experiments, and he can now and then spot where rocks and shoals might be before getting to them. He is at home on salt water in general, though not on this particular stretch of it.

So Socrates starts off, pessimistically enough, trying out a question that occurs to him and then another and another; and by lunchtime all the progress they have made is the negative discovery that most of these particular questions had better not be asked again; though one or two short question-sequences had felt a bit promising. And that, very likely, is all the progress that they do make. But it could be that on the next day Socrates and the boy are getting an idea of some of the deeps and shallows, some of the headlands and islands. Even if steering directly towards their unseen goal is still impossible, steering away from some specific troubles is becoming fairly easy. Perhaps eventually Socrates' initially chartless quasi-piloting fetches them nearly or even exactly where they want to be. Explorers always do have to

start off chartless; yet, as we know, some of them sometimes with luck, flair, patience, and an already trained eye for country, end up with a bit of what had been no-man's-land now properly charted.

Now for my moral. This joint plight of the slave boy and my Socrates who on this occasion had not done his geometrical homework is precisely the plight that Pythagoras himself had been in during the hours or weeks when he was still trying to discover a proof of his own dear Pythagoras' Theorem. For hours or weeks Pythagoras had been his own slave boy being plied by his own unprepared Socratic self with hesitantly mooted candidate-questions nearly, though not quite, randomly hit on, and tentatively posed in nearly, but not quite, random sequences. By thinking he eventually solved his problem without once during the entire course of his ponderings being yet equipped to teach himself or anyone else its solution. He had not, and no one had, done his homework. It was not yet there to do, as it has been there ever since.

Unlike the guide who leads his docile companions along paths that already exist and are already familiar to him, though not to them, the pioneering pathfinder, Pythagoras say, has no tracks to follow; and any particular sequence of paces that he tentatively takes through the jungle may soon have to be marked by him as leading only into swamps or thickets. All the same, it may be, though it need not be, that in a day's time or a year's time he will have made a track along which he can now guide docile companions safely and easily right through the jungle. How does he achieve this? Not by following tracks, since there are none to follow. Not by sitting down and wringing his hands. But by walking over ground where tracks certainly do not exist, but where, with luck, assiduity, and judgment, tracks might and so perhaps *will* exist. All his walkings are experimental walkings on hypothetical tracks or candidate-tracks or could-be tracks, or tracks on appro; and it is by so walking that, in the end, while of course he finds lots and lots of impasses, he also finds (if he *does* find) a viable track.

Pythagoras or, in general, *Le Penseur* is also in just this same unencouraging position. Tracks are found by the pioneer (if they *are* found), only by quasi-following could-be tracks, that is, by his experimentally trying out on appro one bit of ground after another to see if they could henceforth be unanxiously trodden by docile travelers who are not exploring.

There is my moral. Let me stiffen it with two cautionary remarks:

(1) To repeat: Pythagoras in trying to think out the proof of his theorem is not teaching himself this proof, since he has not yet found it. Nor is my Socrates teaching the boy the thing that he has omitted to prepare himself with.

(2) Pythagoras, my Socrates or, to generalize, *Le Penseur,* is tentatively, experimentally, suspiciously, and quite likely despondently trying out on himself expedients, routines, procedures, exercises, curbs, and dodges of types

which teachers do employ, not always successfully, when they want to teach things that they know to pupils who do not. He is trying them out on himself to see if they will be effective, which very often they will not be. They are not already established leads to his goal, but only could-be leads or candidate-clues or potential cues, like the As-If tutorial questions unconfidently put to the slave boy by my geometrically unprepared Socrates.

To say that *Le Penseur* is experimentally subjecting himself to on appro tutorial questions, clues, deterrents, exercises, etc., is not to say merely that he is being histrionic. He need not be, though he may be, aping his old headmaster or his former geometry tutor. The expert moves that you make in climbing the cliff-face may be imitated by a mere mimic; but the patterns of them may also be applied experimentally by the young climber who is trying out ways of scrambling upwards on such cliff-faces. He is deliberately trying to climb cliffs after the ways in which you climb them. He is not aping you but learning to do things of sorts that you have long since learned to do. He is following your examples, not trying to simulate your motions. His success, if he does succeed, is a bit of scaling, not a bit of representing.

Naturally my *Penseur* knows what it is like to be taught things that he does not know by teachers who do; and he knows what it is or would be like himself to be the teacher of some things that he knows to others who do not. So now he experimentally applies to himself, just in case they may turn out to be effective, operations of types that are often or sometimes employed effectively by live teachers upon live pupils. He chalks upon the back of an envelope a diagram, which he does not know to be even an approximation to the right one, in the rather faint hope that it may get him to see something that he needs to see, in the way in which the right diagram on the classroom blackboard often but not always does get the students to see what they need to see. Or he suspiciously concocts for his still unfledged argument a candidate-premise just to see whether it will work, or can be modified into working, as a premise in his argument. It is not yet a premise. It is a premise on appro. He is not basing anything on it; he is only As-If basing something on it. He is not just theatrically staging the moves of an arguer; and he is not just playing at arguing; he is working, working experimentally with a merely could-be argument-step. This is what an hypothesis is, a could-be premise on appro.

We began with some vexatious teasers about thinking, like "if it is an art, craft, or skill, how do we acquire it, and why do schools not give special instruction in it? Why does it not always work? How does it ever work?" Now we can see, just one rung lower down on the sophistication-ladder, that the same questions, though still vexatious, are not quite as vexatious when asked about teaching. Is teaching one art, craft, or skill among others? Could universities teach it? What would they be teaching you in just teaching you to teach (period)?

No, teaching, like thinking, is after all not just one art or skill among others, any more than cooking is one soufflé among others. Yet it remains true, though I think unimportantly true, that there do exist instructional dodges, expedients, etc., varying with different pupils and with different kinds of lessons, without which a good golfer may be a poor golf coach; or without which a new Comprehensive School teacher of French may cope less effectively with her unruly charges than does her colleague whose French is much weaker. I suppose it is such crafts that Colleges of Education do teach. For "education" is not itself the name of one teachable craft among others. "Learning to teach . . ." is an unfinished phrase, because "teaching . . ." is unfinished.

My concluding point is this. Plato said that in thinking the soul is conversing with herself; or maybe "debating" would be nearer the Greek. J. B. Watson said that thinking is sub-*saying;* plenty of philosophers and psychologists declare that all thinking is conducted *in* symbols, or *in* words and sentences, or *in* pictures or *in* diagrams or *in* formulae, etc. The metaphor of words or sentences being the vehicles of thought has still a vogue, and the idea that thought, like American golfers, is in need of vehicles seems to be quite generally swallowed. But what sorts of generalizations about thinking are these? Have amateur or professional introspections revealed this general dependence of thinking upon wording? But if that is all, might not Trobrianders think well enough without such vehicles? After all, we Europeans do eat with knives, forks, and spoons. Yet Trobrianders, maybe, eat without gastronomic vehicles. Or are these generalizations about thinking supposed to be conceptual necessities? Yet if so, just how does the description of someone as, after breakfast, *pensant*, carry with it the information that during that time he was saying things to himself in his head or picturing things to himself in his mind's eye, etc.?

We can now cope with this bother in two moves:

(1) For person A to teach person B something, A must either say things to B, which B hears, takes in, etc.; or A writes things or draws things, which B reads, copies, takes in, etc.; or A demonstrates or shows things to B, which B sees or hears or tastes or smells, etc.; or A audibly jeers at B or visibly beckons or frowns to him, or noticeably pauses meaningfully; and so on and so on. A cannot teach B without communicating with him. Lessons have to be got across, often across a classroom. Lessons are a very special sub-species of interpersonal communications, namely of educatively intended communications. *Of course,* the tuition of B by A requires vehicles.

(2) So, in so far as *Le Penseur* is occupied in experimentally or on appro trying out on himself, as on his inner slave boy, things of the sorts that constitute the vehicles by which live teacher A conveys his lessons to live pupil B, he is necessarily operating, overtly or just in imagination, *with* and *on* such things as words, sentences, diagrams, signals, gestures, etc. He is not, as we

have seen, just mimicking real teachers; but he, just as much as the actor who is mimicking Socrates or Mr. Chips, has in logic to do the sorts of things that are done by Socrates and Mr. Chips in teaching their pupils. We might parody Plato and say that in thinking the soul is not just conversing or debating with herself; she is experimentally conveying could-be lessons to herself. Sometimes she is quasi-lecturing to herself; old-style German thinkers seemed to be doing this all the time.

Cartesians love to depict the activity of the thinker as consisting of supremely immaterial ingredients, such impalpable ingredients as ideas, intuitions, insights, etc. In fact, the crude stuff of thinking has to consist of the perfectly ordinary vehicles of everyday interpersonal lesson-communication, though here employed not in its normal didactic task, but in the parasitic or higher-order task of query-tuition. It does not matter whether *Le Penseur* actually draws his diagrams on paper, or visualizes them as so drawn; and it does not matter whether in his quasi-posing his on appro Socratic questions to himself he speaks these aloud, mutters them under his breath, or only As-If mutters them on his mind's tongue. What matters is what he is trying to do, and is sometimes succeeding in doing, by thus overtly or covertly plying himself with these candidate-lesson-vehicles, for example, that he is trying to find, and is sometimes finding, the proofs of theorems. As A's well-charted teaching can occasionally dispel B's ignorance, so my uncharted thinking can occasionally dispel my own ignorance. Thinking is trying to better one's instructions; it is trying out promissory tracks which will exist, if they ever do exist, only after one has stumbled exploringly over ground where they are not.